"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

29 (0) CHICOM/32-59-37-4/29

AUTHOR: G. Pokrovskiy, Professor

TITLE: The Third Soviet Cosmic Rocket

PERIODICAL: K'o Hsüeh Hsin Wen, 1959, Nr 37, pp 2 and 14

ABSTRACT: This is a translation of an article released by the Information Office of the Soviet Embassy.

Card 1/1

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POKROVSKIY, G.I., general-mayor inzhenerno-tekhnicheskoy sluzhby, prof., doktor tekhn.nauk

Star of communism. Vest.Vozd.Fl. 41 no.2:14-17 F '59.
(MIRA 12:4)

(Space flight)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, Georgiy Iosifovich, prof., dokt. tekhn. nauk; CHERNIGOVSKIY, Aleksandr Anatol'yevich, kand. tekhn. nauk; DIDKOVSKIY, D.Z., otv. red.; KAUFMAN, A.M., red. izd-va; GALANOVA, V.V., tekhn. red.

[Determining the charge for large-scale draw blasting] Raschet zariadov pri massovykh vzryvakh na vybros. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1960. 43 p. (MIRA 14:5)

(Blasting)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

SOV/4209

PHASE I BOOK EXPLOITATION

Pokrovskiy, Georgiy Iosifovich, Professor, Doctor of Technical Sciences, General-Major of the Engineering and Technical Service

Vzryv i yego primeneniye (Explosions and Their Utilization). Moscow, Voyenizdat, 1960. 65 p. No. of copies printed not given.

Ed.: A. A. Chugasov; Tech. Ed.: A. M. Krasavina.

PURPOSE: This booklet is intended for the general reader.

COVERAGE: The book contains a brief, popular discussion of the physical foundations of explosions and their effects. The author pays particular attention to directed explosions and to the control of explosions. The book contains simple computational formulas and numerical data which the author thinks not only facilitate the understanding of explosions but can also be applied practically. The booklet is based on the same author's brochure Vzryv i yego deystviye (Explosions and Their Effect) published in 1954. No personalities are mentioned. There are no references.

Card 1/3

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Explosions and Their Utilization SOV/4209

Destructive action of an explosion 39

Crushing rock by an explosion 45

Calculating charges for normal explosion operations by the ejection of earth --

Directed ejection by an explosion of earth and rock 46

Cumulation--the means of obtaining a superconcentration of explosive energy 58

Conclusion 66

AVAILABLE: Library of Congress (TN 279.P65)

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9/7/60

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G. I. [Pokrovs'ki, H.I.], doktor tekhn.nauk, prof.

Rockets and the prosperity of mankind. Znan. ta pratsia no.8:14-15 Ag '60. (MIRA 13:9)
(Artificial satellites)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

S/017/60/000/009/001/001
A111/A026

AUTHOR: Pokrovskiy, G, Professor, Doctor of Technical Sciences

TITLE: Three Years of Astronautics

PERIODICAL: Voyennyye znaniya, 1960, No. 9, pp. 4 - 5

TEXT: The author, reviewing Soviet development and success in astronautics, lists various Soviet satellites launched since October 4, 1957, comparing their net weight with US satellites launched during the same period. Based on the theory of the Soviet Scientists K.E. Tsiolkovskiy, it has been established that for launching a satellite a multi-stage rocket of a weight several times higher than that of the satellite is needed. The author mentions the telecontrol system which guided the Soviet missile, launched in January 1960, into the target in the Pacific with a deviation of 2 km. In August 1960 the first space rocket was launched, but instead of a pilot two dogs Strelka and Belka were in the cabin. The Soviet Scientist S.N. Vernov and the US Scientist Van-Allen established that the Earth atmosphere contains two radiation strata on the Equator level with a high orbital speed. Further it was established that atomic explosions take place on the sun which cause perturbations and temperature increases in the atmosphere. Investigations of these phenomena and their reactions could render possible long-term wheather forecasts. There are 3 figures.

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S/029/60/000/010/001/006
B024/B067

AUTHOR: Pokrovskiy, G., Professor

TITLE: Meteorological Earth Satellites

PERIODICAL: Tekhnika molodezhi, 1960, No. 10, p. 4

TEXT: The author suggests the systematic organization of measurements and observations of the upper atmosphere for accurate long-range weather forecasts. Special-purpose earth satellites should be launched along a polar orbit at a height of some hundred km. A system of satellites could be developed, where the satellites would move at definite distances from each other, forming a "satellite ring". Besides, a system of ground stations would be necessary to observe the satellites and to receive the automatic air-to-ground communications. The satellite would carry a television camera for obtaining images of clouds and the structure of the atmosphere as well as instruments for determining the radiation components of the atmosphere and of the sun. Radio-relay equipment would provide air-to-air and air-to-ground communications. The satellite would also be equipped with small reactive gas engines for orbital adjustment. A possible version of such weather satellites is shown in the colored illustra-

Card 1/2

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Meteorological Earth Satellites

S/029/60/000/010/001/006
B024/B067

tion on page 5 of this periodical. There is 1 figure.

Card 2/2

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PHASE I BOOK EXPLOITATION SOV/5687

Pokrovskiy, Georgiy Iosifovich, Petr Kuzmich Isakov, Igor' Alekseyevich Merkulov, and Vladimir Vasil'yevich Dobronravov

Put' v kosmos (Road to Space) Moscow, Izd-vo "Znaniye," 1961. 44 p. (Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy. Seriya IV, 1961: Tekhnika, no. 13) 40,000 copies printed.

Ed.: T. F. Islankina; Tech. Ed.: L. Ye. Atroshchenko.

PURPOSE: This booklet is intended for general readers.

COVERAGE: This is a collection of 4 popular-type articles in which some data on Yu. A. Gagarin's space flight are given and fundamentals of space flights are discussed. Several diagrams of satellite trajectories are given, and three photos of Gagarin and of a man in weightlessness test appear in the text. No personalities are mentioned. There are no references.

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Road to Space SOV/5687

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Directing the Flight and Return of a Spaceship 38

AVAILABLE: Library of Congress

Card 2/2

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PONOMAREV, A., general-polkovnik inzhenerno-tekhnicheskoy sluzhby; POKROVSKIY, G., prof., doktor tekhnicheskoy sluzhby; KUVAL'DIN, A., dots., kand. tekhnicheskikh nauk inzhener-polkovnik; MOSTOVENKO, V., dots., kand. tekhnicheskikh nauk inzhener-polkovnik; GONCHAROV, M., polkovnik; TARANTSOV, A., polkovnik; VASIL'YEV, N., polkovnik; GORDEYEV, N., kapitan 1 ranga; KOZIN, K., kapitan 1 ranga; ARKHIPOV, M., dots., kand. tekhn. nauk inzhener-podpolkovnik; SEDOV, A., dots., kand. tekhn. nauk, inzhener-podpolkovnik; MELIK-PASHAYEV, N., dots., kand. tekhn.nauk, inzhener-podpolkovnik; TIKHOMIROV, Yu., dots., kand. tekhn. nauk, inzhener-podpolkovnik; PARFENOV, V., kand. tekhn. nauk, inzhener-podpolkovnik; GEORGIYEV, A., inzh.-podpolkovnik; KRUCHININ, V., inzh.-podpolkovnik; MEKONOSHIN, N., inzh.-podpolkovnik; RYKOV, S., inzh.-podpolkovnik; SURIKOV, B., inzh.-podpolkovnik; ZHUKOV, V., inzh.-mayor; NOVIKOV, M., inzh.-mayor; SUSHKOV, Yu., inzh.-kapitan; ASTASHENKOV, P.T., inzh.-podpolkovnik; VASIL'YEV, A.A., red.; KARYAKINA, M.S., tekhn. red.

[New advances in military technology for youthful readers]Molodezhi o novom v voennoi tekhnike. Moskva, Izd-vo DOSAAF, 1961. 342 p. (MIRA 15:2)
(Rockets (Ordnance)) (Atomic weapons)
(Electronics in military engineering)

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POKROVSKIY, G., prof.

Rocket meteor. Tekh. mol. no.1:36 '61. (MIRA 14:3)
(Meteors)

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B117/B215

3.2400

AUTHOR: Pokr ıy, G., Professor

TITLE: Met rocket

PERIODICAL: Te. molodezhi, no. 1, 1961, 37

TEXT: This popular-scientific article reports on the laws in the flight of meteors and meteorites in which the laws of aerodynamics play a comparatively minor part. Thus, phenomena and forces occur which, in connection with theoretical and practical space navigation, have become of great importance, especially for the deceleration of missiles returning to the earth. The question arises whether it is possible to build a jet-propulsion motor operated by the kinetic energy of the missile. An example of this theory are the phenomena in which some meteorites are decelerated in a surprisingly strong manner, leaving behind masses of a red-hot substance. Here, the negative accelerations are 1000 to several thousands of times higher than gravitational acceleration. Simple calculations showed that elementary aerodynamic forces are not sufficient for such intensive deceleration. When the meteor flies through thin layers of air at high speed, large quantities of

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Meteoric rocket

ions and electrons are knocked off by the molecules of the air. The jet of these particles which decelerate the meteor is similar to that of a common jet-propulsion motor. However, there is another possibility of deceleration. The gas developing during combustion envelops the meteor by a thick layer, thus increasing its volume and also the aerodynamic resistance which increases proportional to the diameter. The above phenomena of deceleration hold only for substances of high electrical conductivity. They are almost absent in meteors consisting of a highly insulating substance. This is due to the negative charge of the meteor's front, and it also prevents the meteor from being destroyed by the impact of air molecules, and the decelerating recoil action. Thus the deceleration of a fast flying object depends on the electric charge of its front. This is a revolutionary discovery in aerodynamics. An even more remarkable phenomenon is the saturation of the masses of a meteorite by a gas dissolved in it, or the almost ball-type shape of a meteorite. In the latter case, it usually acquired considerable angular momentum and fast rotation round an axis vertical to its direction of flight sets in. Thus, a system develops which works like a jet-propulsion motor which not only compensates the air resistance, but also accelerates the flight of the meteor. For a long time, meteors have been

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Meteoric rocket

observed which travel at practically constant velocities, and others travelling at velocities unusual in space. This possibly may be due to self-acceleration. There is 1 figure.

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B117/B224

3.2400(1062,1395)

AUTHOR: Pokrovskiy, G., Professor

TITLE: Steps to the stars

PERIODICAL: Tekhnika molodezhi, no. 4, 1961, 35 - 36

TEXT: The author deals with the problem of a thorough investigation of planets, and proposes a design of a spaceship. He believes that it would be more convenient to investigate the respective planet, e. g., Mars, first as a whole, and not only its single points, as in the case of a landing. For this reason, observations would have to be made from a certain distance. For the purpose of photographing details on the Mars surface from a distance of about 100 km, an optical system based on the principle of the reflecting telescope would be suitable. In the outer space where the effect of tidal forces (cf. "Stroitel'stvo v kosmose (construction in the cosmos), Tekhnika - molodezhi, no. 10, 1959) is insignificant, the mirror of the optical system could be made of a thin synthetic foil coated with a thin, strongly reflecting metal layer. The mirror can have the form of a lens-shaped bubble enclosed by gasfilled

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Steps to the stars

balloons of the same material. One hal. of the lens could be made transparent and the other reflecting. The solidly packed system is kept in the spaceship. At the given moment, it will be hurled out automatically. In the vacuum of the Universe, the bubble will expand. ıe cameras are in the stern of the spaceship which will turn, during the exposures, with the bow toward the photographed spot. The turn is done with the aid of smaller propulsion drives. The tidal forces acting during the orbiting around a celestial body, e. g. Mars, will keep the spaceship automatically in the desired position, and stretch the ropes connecting the lens and the mirror. This principle could also be applied to manufacture other systems of thin foils, e. g., solar power plants short-wave radio relay stations, or reflecting telescopes for exploration purposes. All these devices are interconnected and are suspended in the outer space like the links of a chain stretched by the tidal forces. Prior to the return to earth, all devices are detached from the spaceship and burn up when entering the upper layers of the atmosphere. The spaceship is braked by an aerodynamic maneuver. For this purpose, the ship is built in the form of a supersonic aircraft with triangular wings. In order to ensure the landing at a certain place, the braking operation is

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carried out by ordinary parachutes which are opened immediately before landing. A further deceleration and the steering of the spaceship during landing are done with the help of the main propulsion motor. The landing is, so to speak, done in the reverse gear. The photographs shot in space can be brought back safely only by a safe and accurate landing. This is of great important since telephotos can never be very sharp. A safe and accurate landing will make it possible to man spaceships of this type and reach the planet observed. With an unmanned spaceship, however, this might not be the case, as the automatic apparatus would possibly not perform the necessary corrections of the rocket's path toward the planet. The enclosed colored insert shows the spaceship proposed by the author during its flight across Mars. The bow of the spaceship (1) is directed toward the planet. The above-described system of thin foils is thrown out of its stern. This system consists of a concave photographic mirror (2), a telescope (3), a radio-relay antenna (4) and a solar power plant (5). There are 3 figures and 1 Soviet-bloc reference.

(Note: Due to the size of the figure we were unable to fit it to a master.)

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POKROVSKIY, G.I., prof., general-mayor inzhenerno-tekhnicheskoy sluzhby doktor tekhn.nauk

Space flight of man. Vest. Vozd. Fl. no.4:59-62 Ap '61. (MIRA 14:7)

(SPACE MEDICINE)

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3.2320 (2105, 2205)
3,2440 (1060 only)

S/026/61/000/005/003/003
D051/D113

AUTHOR: Pokrovskiy, G.I., Professor, Moscow

TITLE: Evaporating meteors

PERIODICAL: Priroda, no. 5, 1961, 85-87

TEXT: In view of the ever growing importance of problems connected with the interaction of the air with bodies moving at supersonic speed in the upper layers of the atmosphere (artificial satellites, cosmic flights) the author discusses some phenomena arising from the movement of meteors on their approach to Earth. First of all, the author refers to the here unsuitable general formula of aerodynamics

$$F = \frac{C_x}{2} v^2 S \qquad (1)$$

where F - resisting force, C_x - drag coefficient (depending on the form of the moving body), - density of the air, v - velocity and S - cross section of the moving body. This formula, based on airflow around the body and constancy of its shape and volume, cannot apply to meteors because due to

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X

heating and subsequent pulverization processes they can essentially change their shape. Under such conditions special attention must be paid to these microprocesses which arise when individual particles of the medium strike the surface of a moving body. As was shown for the first time by K.P. Stanyukovich in a series of investigations, the impulse imparted by the particle to the body under these conditions must be calculated along with the ejection of the mass destroyed by the collision. Following this line, the author describes and discusses the effect of the air on a rapidly moving body. The air flowing around the body is compressed and heated. The temperature increase is proportional to the square of the rate of velocity. Therefore, at a certain speed the front part of the moving body will begin to melt and even evaporate at still higher speeds. The vapors form a film which pushes back the airflow impinging upon the body. Finally such conditions of airflow around the body will result which correspond to an apparent increase in the cross section. It can be assumed that $S = S_e$, the effective cross section; hence

$$S_e = S + Sk\,(v^2 - v^2_{kr}) \qquad (2)$$

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Evaporating meteors

where k - a coefficient depending on the properties of the body and the surrounding air and v_{kr} - the speed at which evaporation begins. The increase in resistance caused by this process can be expressed by the corresponding increase in the drag coefficient. For the various substances of which meteors are composed, evaporation begins at velocities of 1-3 km/sec. Meteors, however, enter the atmosphere at tens of kilometers per second. For such velocities the formula changes into an expression depending not on the second but on the third power of the velocity:

$$F = \frac{kC_x}{2}\rho v^3 S \qquad (3)$$

where coefficient k has the value $\frac{1}{4} \div \frac{1}{9}$ sec^2/km^2. This means that on transition from the usual aircraft velocities (up to 1-2 km/sec) to those required under space conditions, the usual laws of aerodynamics will no longer apply. They must be replaced by new ones basically derived from the conditions where the moving body is destroyed by the surrounding medium. In this connection, the energy yield due to chemical reactions is also of great importance. At sufficiently high speeds, in addition to the high tempera-

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Evaporating meteors

ture of the air impinging on the moving body, a high partial pressure of oxygen in the zone adjacent to the head of the meteor can be observed. Under these conditions a considerable part of the oxygen is reactant. The liberated energy will be proportional to the mass of oxygen consumed. Hence it can be deduced that the additional increase in the effective cross section of a moving body, due to the action of combustion products, will be proportional to its surface and will not depend on velocity, if the latter is above a certain critical value. Also, these circumstances lead to the conclusion that in the case of cosmic speeds the physical foundations of aerodynamics have to be enlarged and changed. Furthermore, there are still many other peculiar characteristics connected with the movement of meteors. For instance, it has not yet been possible to explain why meteors moving at high speed and subjected to intense erosion are either weakly retarded or not retarded at all. In order to explain this phenomenon, the author briefly sets forth the well-known theory of comet movement (autorotation, reactive power of the combustion products in the tail vacuum behind the head of the comet) and considers that the high speeds of comets which do not correspond to the theoretical assumption are possibly reached due to self-acceleration. It has not yet been possible, however, to ascertain the latter phenomenon. There are 2 diagrams.

Card 4/4

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POKROVSKIY, G., prof., doktor tekhn.nauk

Navigation in space. Radio no.6:10-11 Je '61. (MIRA 14:10)
(Astronautics)

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D038/D112

27.6000

AUTHOR: Pokrovskiy, G., Professor, Doctor of Technical Sciences

TITLE: Man goes out into space

PERIODICAL: Kryl'ya rodiny, no. 6, 1961, 17-18

TEXT: The article deals with the first cosmic flight of Major Yu. A. Gagarin in the spaceship "Vostok", which proved that man can exist and function normally in space. K. E. Tsiolkovskiy was amongst the first scientists to point out that man in a cosmic flight would experience two distinctly different states, i.e. overloads which would be felt during the acceleration and deceleration in the atmosphere before landing, and a state of weightlessness while the spaceship is in orbit. Insignificant "g" loads would be possible during change-over from one orbit into another or before landing. "g" loads have been known to high-speed pilots, and momentary weightlessness to aerobatic pilots. A practical illustration of the incessant transitions from "g" loads to weightlessness on a swing with 10-m-long ropes. However, checking of a prolonged state of weightlessness had to be carried out under conditions of a real cosmic flight. Three aspects of the pheno-

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Man goes out into space

mena were observed: 1) weightlessness reduces the load on blood vessels and facilitates the heart functions. It lowers the strain of the human body, and could be used as a treatment for heart diseases; 2) it affects the intake of food, which becomes weightless; further investigation as to the food's progress in the digestive system was required; 3) the force of gravity must play an important part in man's orientation in space as it acts on the body as a whole, and on the vestibular apparatus, which governs the sensation of "Top" and "Bottom". After Major Yu. A. Gagarin's flight in space it was found that the human body withstands all unexpected and unusual conditions quite well. There are 3 figures.

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POKROVSKIY, G., prof., general-mayor Inzhenerno-tekhnicheskoy sluzhby

Outer space belongs to humanity. Starsh.-serzh. no.9:5-6 S '61. (MIRA 15:2)

(Outer space)(Astronautics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., general-mayor inzh.-tekhnicheskoy sluzhby, prof., doktor tekhnicheskikh nauk

Protracted flight in orbit. Vest. Vozd. Fl. no.9:80-84 S '61. (MIRA 14:11)

(Artificial satellites--Orbits)
(Space flight--Physiological effect)

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27595
S/029/61/000/010/002/004
D037/D113

3.2420 (1049, 1482)

AUTHOR: Pokrovskiy, G., Professor

TITLE: The cosmic mirror of the Earth's depths

PERIODICAL: Tekhnika molodezhi, no. 10, 1961, 5

TEST: The author describes how the internal structure of the Earth and other planets affects their magnetic fields and radiation belts and discusses some of the problems of future space flights in the light of radiation danger. The distortion of the orbital shape of an artificial satellite approaching the Earth is caused by the heterogeneity of the field of gravity. By observing the propagation of seismic waves inside the Earth it has been possible to establish how they reflect from the denser layers of the Earth's internal structure (fig. 1). The central denser core possesses the properties of a huge magnet. These properties are probably created by the immense pressure of the upper layers of the Earth, which "crushes" the ordinary electron shells of the atoms and molecules and changes the properties of the constituent matter, which is, in turn, doubled in density. A magnetic field

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The cosmic mirror of the ...

exists only when the radius of a celestial body is larger than 3,000 km and its density exceeds the density of the Earth's crust and mantle. Investigations carried out by means of Soviet rockets have confirmed that the Moon, for example, has no perceptible magnetic field. The magnetic field of the Earth captures the high-energy particle flux reaching the Earth from the Sun and from the depths of interstellar space. These particles form three radiation belts which are a great danger to cosmonauts. Until recently scientists thought that all interplanetary flights had to be completed on the orbital plane of the Earth and the other planets. Now it is being considered that a planet with a radiation belt should be approached at its polar regions. By this means, it is necessary for the space ship to slip through the narrow gap between the denser atmospheric layers of the planet and the internal radiation belt. Similarly, this has also to be considered during a manned flight from and to the Earth. Such difficult conditions considerably complicate interplanetary rocket flights and also the calculation of possible trajectories. The gravitational and magnetic fields of the Earth and the other planets and the gravitational field of the Sun must be taken into consider-

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27595
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D037/D113

The cosmic mirror of the ...

ation. Therefore, scientists are continually studying the internal structural and magnetic fields of celestial bodies. There is 1 figure.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

28316
S/085/61/000/011/001/002
D036/D113.

3.2300

AUTHOR: Pokrovskiy, G., Professor, Doctor of Technical Sciences

TITLE: On flights to the Moon, Mars and Venus

PERIODICAL: Kryl'ya rodiny, no. 11, 1961, 22-23

TEXT: The author discusses the problems of future flights to the Moon, Mars and Venus, in particular the difficulties of sending manned space-ships along orbits avoiding dangerous radiation belts around the two latter planets. On the basis of her previous achievements it is considered that the USSR will be able to carry out such flights in the near future. However, before such flights can be made a certain amount of space research will have to be done. Automatic space vehicles must be sent to the Moon to photograph its surface, study fields of force and verify the possible presence of dangerous radiation belts. An automatic station should be landed on the Moon to transmit data on the structure and composition of its surface matter. This would be done by radio; however, it may soon be possible to send a TV camera to the Moon and send the pictures to Earth. This may be followed by sending an automatic

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D036/D113

On flights to the Moon ...

station to the Moon for the purpose of bringing back samples of lunar matter to Earth. The next stage, either following the flights by automatic space vehicles or taking place simultaneously with them, will consist of manned flights to the vicinity of the Moon, to be made during the periods of the least solar activity. Information on the properties of the Moon's surface is required before one or more men can actually land on the Moon. The flights to Mars and Venus will follow a similar pattern (although TV transmission to Earth would not be possible in the present stage of technical development), but manned flight will be greatly complicated by the radiation factor. Unlike the Moon, Mars and Venus are believed to have magnetic fields and the resultant radiation belts, which would have to be avoided by approaching these two planets along trajectories passing close to their axes, there being no radiation fluxes over the poles during reduced solar activity. This means that the space ship would have to be brought out of the orbiting plane of the planet into another plane forming a considerable angle with it, and would follow a complex trajectory as shown in Fig. 6. Fig. 6 shows a trajectory which would bring the space ship back to its starting point;

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On flights to the Moon ...

Fig. 7 shows how, in order to return the space ship to Earth, the former could be temporarily transformed into an artificial satellite of its destination planet, which it would then leave at a moment calculated to bring it back to Earth. Of course, to follow such a trajectory would require considerable power from the jet motor of the space ship on certain sections. In conclusion the author states that the above problems can only be solved by state planning of scientific personnel and material resources and great enthusiasm on the part of those concerned; as these conditions are present in the Soviet Union, it can be assumed that she will continue to play a leading role in cosmonautics. There are 7 figures.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

27046
S/534/61/000/020/002/002
D208/D301

3,2320 (1502)

AUTHOR: Pokrovskiy, G.I.

TITLE: On the possible mechanical phenomena during the motion of meteor bodies

PERIODICAL: Meteoritika, 1961, no. 20, 95-102

TEXT: The motion of a meteor body through the earth's atmosphere is usually accompanied by intensive heating and considerable mass loss. The latter may give rise to an increase in the braking effect of the atmosphere, particularly when the mean free path of the erosion products is of the same order of magnitude as the linear dimensions of the body. These effects are considered in some detail in the previous paper (p. 54 of this issue). However, the present author argues that an increase in the braking effect due to erosion is not the only phenomenon which can occur. Under certain conditions, erosion may give rise either to a reduction in the aerodynamic resistance, or an actual acceleration.

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On the possible mechanical...

It is stated that this paradox has not as yet been discussed in literature although it can be explained on the basis of some relatively simple physical ideas. The point is that the meteor body cannot be considered in isolation from the erosion products which form a "tail". The velocity of the center of gravity of the system as a whole (meteor + tail) does of course continuously decrease. However, the "head" of the system may actually experience an acceleration. A number of simple laboratory experiments are suggested (and some have been performed) to verify the above suggestion. A simple demonstration may be performed as follows. Consider a cup filled with wet clay. Suppose the cup is suspended from four parallel threads and a bullet is fired at the closed end. When the bullet emerges at the other end it ejects an appreciable proportion of the clay and the reaction on the cup may, under suitable conditions, cause it to move in the direction opposite to the direction of motion of the bullet. Thus the paradox may easily be resolved by a relatively simple application of theoretical dynamics. Furthermore, the incandescent trail of a meteor can also play an important role in the

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On the possible mechanical...

final stages of the meteor's life, i.e. during its disintegration. This is due to the fact that the tail interacts with the shock wave produced by the "head" and acts as a kind of wave-guide for it. There are reasons to suppose that the meteor trail is responsible for the asymmetry in meteor explosions. Acknowledgements are expressed to Engineer F.F. Gladkikh for assistance in the experimental part of the present work. There are 6 figures.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIJ, G. J., doktor technickych ved

Conquest of the universe and the rocket transportation. Letecky obzor 5 no.12:385-387 D '61.

1. Generalmajor inzeryrsko-technicke sluzby.

(Space flight) (Rockets(Aeronautics))

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G.I., prof., doktor tekhn.nauk, general-mayor inzhenerno-tekhnicheskoy sluzhby

Space, space flight and economics. Grazhd.av. 18 no.8:21-22 Ag '61. (MIRA 14:8)

(Space flight) (Space in economics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., prof.

Space mirror for the depths of the earth. Tekh.mol. 29 no.10:5 '61. (MIRA 14:10)
(Magnetic fields (Cosmic physics))

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., prof., doktor tekhn.nauk

Physical principles of rocket weapons with nuclear warheads. (MIRA 14:1)
Voen. znan. 37 no. 2:19-20 F '61.
(Rockets (Ordnance)) (Atomic weapons)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G.I., prof., doktor tekhn.nauk

Man in space. Voen.znan. 37 no.5:4-5 My '61. (MIRA 14:4)
(Astronautics)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., prof., doktor tekh.n.nauk

Physical bases of methods of detection. Voen. znan. 37 no.8:21-22 Ag '61. (MIRA 14:7)
(Military reconnaissance) (Naval reconnaissance)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G.I., prof. (Moskva)

Evaporating meteors. Priroda 50 no.5:85-87 My '61. (MIRA 14:5)
(Meteors)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

AM4026338 BOOK EXPLOITATION S/

Pokrovskiy, Georgiy Iosifovich (Professor, Doctor of Technical Sciences); Chernigovskiy, Aleksandr Anatol'yevich (Candidate of Technical Sciences)

Calculation of blasting charges for mass explosions (Raschet zaryadov pri massovy*kh vzry*vakh na vy*bros) 2d ed., rev. and enl. Moscow, Gosgortekhizdat, 1962. 84 p. illus., biblio., tables. Errata slip inserted. 4000 copies printed.

TOPIC TAGS: explosive charge, blasting charge calculation, explosive material

PURPOSE AND COVERAGE: This booklet is intended for engineers in charge of blasting operations and for technical personnel using explosives. Methods are described for the calculation of explosive charges designed for the throwout effects used in open-pit operations, road building, and on hydroengineering projects. Numerous formulas are given for the various blasting conditions in various types of soil. The appendix consists of ballistic tables.

Card 1/3

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POKROVSKIY, G.I.

PHASE I BOOK EXPLOITATION SOV/6306

Lyakhov, Georgiy Mikhaylovich, Doctor of Technical Sciences, and Georgiy Iosifovich Pokrovskiy, Professor, Doctor of Technical Sciences.
Vzryvnyye volny v gruntakh (Explosion Waves in Grounds) Moscow, Gosgortekhizdat, 1962. 101 p. Errata slip inserted. 3000 copies printed.

Ed. of Publishing House: I. K. Kit; Tech. Ed.: G. M. Il'inskaya.

PURPOSE: The book is intended for engineers and research workers dealing with blasting operations and the problems connected with the theory of explosion waves. It may also be used by graduate students specializing in this field.

COVERAGE: This book presents briefly the fundamental principles of the theory of the waves which develop during blasting charges of explosive materials. It summarizes the results of experimental

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investigation of maximum pressure, impulse, time of action, and other parameters of explosions. Dependence of these values on the physical and mechanical properties of the ground was determined. The cause of sharp differences in the value of wave parameters in different grounds has been established. It was found that these differences are due, in the first place, to the fluctuations of water and air content in pores. Even the smallest fluctuations of these factors may change the wave parameters hundreds of times. The results obtained make it possible to study more thoroughly the general effect of explosions, to increase the efficiency of blasting operations, and to apply better safety measures. There are 67 references, of which 61 are Soviet.

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POKROVSKIY, Georgiy Iosifovich; MORALEVICH, Yuriy Aleksandrovich; ZVONKOV, V.V., zasl. deyatel' nauki i tekhniki, nauchnyy red.; LIVANOV, A., red.; SHLENSKAYA, M., tekhn. red.

[To the forefront of a bold dream] Na perednii krai smeloi mechty. Moskva, Molodaia gvardiia, 1962. 207 p. (MIRA 16:4)

1. Chlen-korrespondetn Akademii nauk SSSR (for Zvonkov).
(Science) (Technology)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

S/026/62/000/003/005/006
D055/D113

AUTHOR: Pokrovskiy, G.I., Professor (Moscow)

TITLE: Cosmic speeds and resistance of media. New thermal and chemical phenomena at high speeds.

PERIODICAL: Priroda, no. 3, 1962, 105-107

TEXT: Phenomena associated with the resistance of bodies moving at high cosmic speeds are discussed. If a body moves at 3600 km/hour, the temperature at which air molecules strike it is 900°C. In certain materials this may cause fusion, evaporation, or combustion. At circular speed this temperature reaches 100,000°C, which leads to the evaporation of any material. Besides heating and disintegration, combustion is also possible if the material can combine with atmospheric oxygen. Blunt-nosed aluminum cylinders burn intensely in air at 4800 km/hr. Without combustion, their temperature at this speed would reach only 900°C, but it is known that the luminous trail left by an aluminum cylinder consists of aluminum oxides

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D055/D113

Cosmic speeds ...

with a temperature of up to 2500°C. K.P. Stanyukovich's calculations show that the bombardment of air molecules on a fast-moving body causes a rapid increase in the resistance of the medium as the speed rises. To the ordinary resistance, which is proportional to the square of the speed, is added the resistance arising when the body begins to disintegrate and increasing approximately in proportion to the cube of the speed. These processes occur when the body moves in rarefied air, but when the air is so dense that the molecular free path is less than the dimensions of the moving body the latter is enveloped by a heated gas which is a mixture of air and vapor from the body. In this case, the air is moved aside not only by the body but also by the mantle of gas, so that resistance will increase as the cross-section of the mantle increases. The gases forming the mantle are highly ionized, forming a plasma in which heat transfer takes place mainly with free electrons. If the moving body is an insulator and can retain electrons on its surface, the electron bombardment causes a negative electrical charge on the surface, which is thus protected from further

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Cosmic speeds ...

bombardment. Consequently energy transfer to the body decreases sharply and disintegration of the surface layer slows down, which in turn leads to a reduction in the force of aerodynamic deceleration. There are 2 figures.

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S/029/62/000/004/001/001
D045/D114

AUTHOR: Pokrovskiy, G., Professor, Doctor of Technical Sciences

TITLE: Satellites of satellites. Micropaths

PERIODICAL: Tekhnika molodezhi, no. 4, 1962, 35-36

TEXT: The work of repairmen engaged on the maintenance of artificial satellites will involve certain occupational hazards. In this connection, the author reviews some aspects of the motion of bodies in the space surrounding an artificial satellite. Three principal cases of motion are reviewed: (1) The movement of a body repelled from the center of a satellite, (2) the movement of bodies leaving the satellite at points away from the satellite's center with acceleration on repulsion and (3) the movement of bodies leaving the satellite without any impetus or energy losses. In the first two cases, the body will be returned to the satellite and in the third case it will get lost in space. The author concludes that he has only

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POKROVSKIY, G., prof., doktor tekhn.nauk, general mayor inzhenerno-tekhnicheskoy sluzhby

Reliability and accuracy. Starsh.-serzh. no.9:3 S '62. (MIRA 15:11)

(Astronautics)

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POKROVSKIY, G., prof., doktor tekhn.nauk

Great achievement of our country. Voen. znan. 38 no.4:11-12 Ap '62. (MIRA 15:4)
(Astronautics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., prof., doktor tekhn.nauk

What is meant by a global rocket. Voen. znan. 38 no.7:25 Jl '62. (MIRA 15:6)

(Rockets (Ordnance))

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POKROVSKIY, G., prof., doktor tekh.nauk

Unprecedented group flight into outer space. Voen. znan. 38 no.9:3-4 S '62. (MIRA 15:9)
(Astronautics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G.I., prof. (Moskva)

Radiation belts of celestial bodies. Priroda 51 no.8:93-95 Ag '62. (MIRA 15:9)

(Cosmic physics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

S/085/63/000/001/001/001
A004/A126

AUTHOR: Pokrovskiy, G., Professor, Doctor of Technical Sciences

TITLE: On the way to the stars

PERIODICAL: Kryl'ya rodiny, no. 1, 1963, 6 -7

TEXT: After devoting approximately two-thirds of his article to the history of space flight, emphasizing, of course, the outstanding pioneer work of Russian and Soviet scientists as far back as 1881 and presenting also a table of all manned space flights carried out hitherto, the author discusses the possibilities and further development of astronautics. He mentions that, with the aid of only three relay satellites, it would be possible to create a global television and communication system, that satellite systems could be used for the observation of the Earth's atmosphere from space, for recording cosmic radiation, and also for recording sun radiation, not distorted by the lower atmospheric layers. Also in astronomy great progress could be achieved by mounting telescopes on satellites or on the moon, so that observations could be carried out without any atmospheric interference. The author points out that one of the

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

On the way to the stars

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A004/A126

most important results obtained by the space flights performed so far was the compilation of data on the responses of man exposed to long-term weightlessness. These flights proved the possibility of man withstanding long-term weightlessness without his reactions being impaired and without any detrimental effects to his health. There is 1 table.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

S/029/63/000/002/002/002
A004/A126

AUTHOR: Pokrovskiy, G., Professor

TITLE: The "Flying Dutchman" returns from legend

PERIODICAL: Tekhnika molodezhi, no. 2, 1963, 37

TEXT: The author presents his idea of an ocean liner developing a speed of 70 - 80 km/hour. The liner has two main parts, the underwater and above-water parts. The above-water part is streamlined and located high above the water surface. The other part of the craft consists of a system of underwater wings and screw propellers. The wings would carry a considerable part of the liner's weight. Depending on the height of waves and the cruising speed, the above-water part of the liner can be lifted by means of a system of pillar-type jacklifts. On the other hand, the underwater part of the ship is lowered the deeper into the water the higher the waves. Since the leg-shaped pillars have a very small cross section, the waves practically do not affect the liner. Thus it will not be subjected to rolling and pitching, while no power will be consumed for overcoming the wave resistance. There is 1 figure.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

ACCESSION NR: AP4006037 S/0004/63/000/012/0020/0020

AUTHOR: Pokrovskiy, G. I. (Professor, Doctor of technical sciences)

TITLE: Polar atom

SOURCE: Znaniye - sila, no. 12, 1963, 20

TOPIC TAGS: laser beam, nuclear reactor, atomic energy, nuclear power plant, polar power plant, polar region development

ABSTRACT: Author gives a general description of the uses of atomic power. Author states that he presented his views concerning the prospects of a practical application of atomic energy many years ago in the journal "Znanie-sila" (Knowledge is power). Article claims that Soviets were initiators of nuclear test ban. Atomic energy will serve the entire world in the future. Atomic power plants for the Artic and Antarctic regions are discussed. These future power plants will furnish electricity to the sparsely-populated areas. Author visualizes a canal, hanging in air, for the purpose of transmitting atomic power. This canal will not be affected by atmospheric conditions. A super-powerful, radiant energy flux emitted by a quantum generator can serve as the canal. Exploration

Card 1/2

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POKROVSKIY, G. [Pokrovs'kyi, H.], prof.; MORALEVICH, Yu. [Moralevych, IU.], zhurnalist

Foam can be hard. Nauka i zhyttia 12 no.3:14-15 Mr '63.
(MIRA 16:11)

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POKROVSKIY, G. [Pokrovs'kyi, H.]; MORALEVICH, Yu. [Moralevych, IU.]

On the edge of a daring dream (to be continued). Nauka i zhyttia 13 no.7:60-62 Jl '63. (MIRA 16:10)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G. [Pokrovs'kyi, H.]; MORALEVICH, Yu. [Moralevych. IU.]

On the front line of a daring dream. Nauka i zhyttia 13 no.10:56-59 N '63. (MIRA 16:12)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, G., prof., doktor tekhn. nauk

From aircraft to space flight. Kryl. rod. 14 no.10:20-21 O '63. (MIRA 16:11)

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POKROVSKIY, G., general-mayor, prof., doktor tekhn.nauk

Man and technology in military affairs. Voen.znan. 39 no.9:
23-24 S '63. (MIRA 16:10)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001341630012-0

POKROVSKIY, Georgiy Iosifovich, prof., doktor tekhn. nauk;
FAYNBOYM, I.B., red.

[Superpower light] Sverkhmoshchnyi svet. Moskva, Znanie, 1964. 27 p. (Novoe v zhizni, nauke, tekhnike. IX Seriia: Fizika, matematika, astronomiia, no.21) (MIRA 17:11)

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POKROVSKIY, G.I.; AGOSHKOV, M.I., red.

[Explosion] Vzryv. Moskva, Nedra, 1964. 165 p.
(MIRA 17:10)

1. Chlen-korrespondent AN SSSR (for Agoshkov).

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ACCESSION NR: AT4035835 S/2534/64/000/024/0099/0107

AUTHOR: Pokrovskiy, G. I.

TITLE: Rock deformation associated with meteor craters

SOURCE: AN SSSR. Komitet po meteoritam. Meteoritika, no. 24, 1964. Trudy* Desyatoy Meteoritnoy konferentsii v Leningrade 29 maya - 1 iyunya 1962 g., 99-107

TOPIC TAGS: rock deformation, meteorite, meteor crater, meteor

ABSTRACT: The outer walls of a meteor crater can be distorted by alluvium, erosion, and the activity of plants and man; it is therefore desirable to study meteor craters by investigating the deformations of rock caused by the meteor impact which are unaffected by the agents mentioned. The author discusses three phenomena found at sites of meteor impacts: displacements of part of the mass, densification of part of the mass by the explosive seismic wave arising at the time of the high-velocity impact, and fixat i ons of traces of soil and vegetation present at the time of the event. The author assumes that investigation of the craters caused by impact of shells and bombs and underground explosions can be applied to the study of the mechanism of meteor crater formation. As a simplification it is shown that crater formation occurs in two phases: 1) formation of the crater and ejection of rock from it, with formation of a high "splash" (base wave) around the crater, and 2) overturning of the

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pulse wave, with formation of a circular wall around

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ENCLOSURE: 01

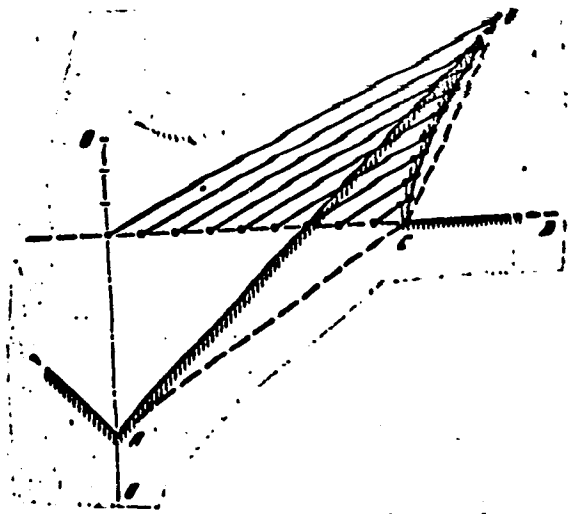

Fig. 1. Movement of particles from the crater axis

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ENCLOSURE: 02

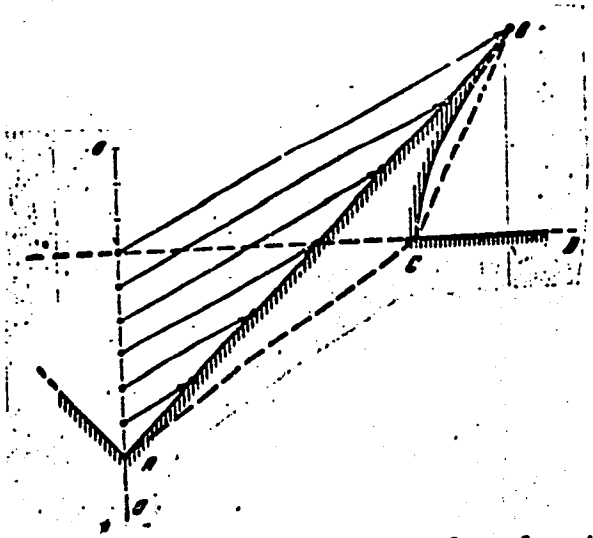

Fig. 2. Movement of particles forming the outer wave surface

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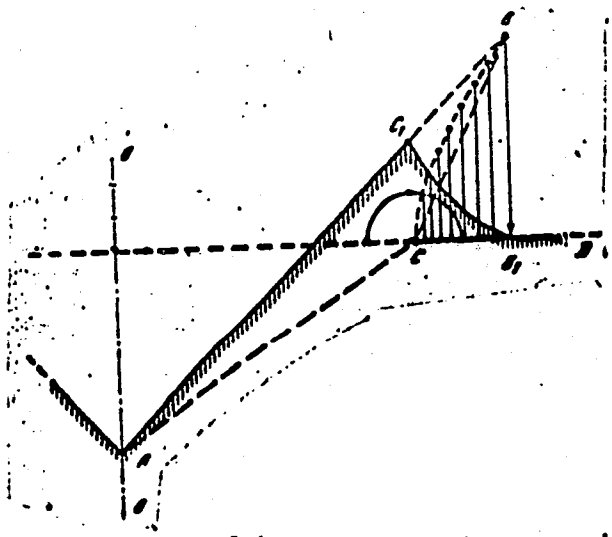

Fig. 3, Movement of base wave onto ground surface

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ENCLOSURE: 04

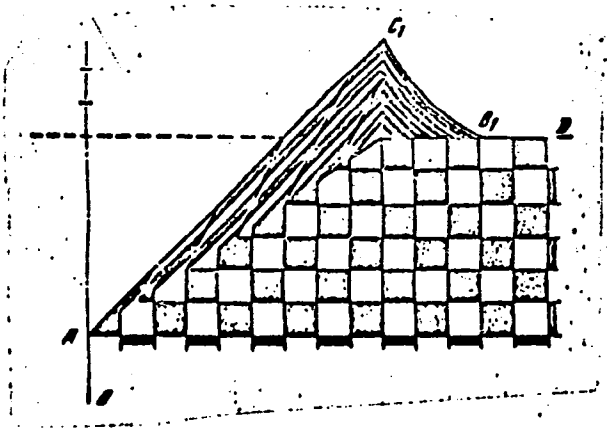

Fig. 4. General distribution pattern of shear deformations

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ACCESSION NR: AT4035836 S/2534/64/000/024/0108/0111

AUTHOR: Pokrovskiy, G. I.

TITLE: A possible variation in the explosion of meteorites

SOURCE: AN SSSR. Komitet po meteoritam. Meteoritika, no. 24, 1964. Trudy* Desyatoy Meteoritnoy konferentsii v Leningrade 29 maya -1 iyunya 1962 g., 108-111

TOPIC TAGS: meteor, meteoric explosion, meteorite

ABSTRACT: The nature of meteoric explosions is considered, assuming that the exploding mass is homogeneous, the heating due to friction is more or less uniform on all sides of the meteor, and the meteor is spherical. The heat wave due to the external friction penetrates the meteor to a depth δ:

$$\delta = \sqrt{\frac{\lambda}{cQ} t}, \quad (1)$$

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where on the cold nucleus, it imposes tensile stress equal to

$$\sigma = \frac{1}{2}\frac{2\delta}{R}\left(\frac{\Delta L_l - \Delta L_\sigma}{L}E - \frac{1}{2}\mu\sigma\right) \qquad (2)$$

At the moment of explosion, σ must equal σ_p, the resistance to rupture stress of the meteoric mass, and the temperature at which the explosion occurs

$$\theta_{vz} = \frac{\sigma_p}{aE}\left(\frac{R}{\delta} + 1 - \frac{3}{2}\mu\right). \qquad (3)$$

The relationship between δ and R, the radius of the cold central nucleus is

$$\left(\frac{\delta}{R}\right)_{vz} = \frac{1}{\frac{aE}{\sigma_p}\theta_{vz} - 1 + \frac{3}{2}\mu} \qquad (4)$$

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and constitutes criteria for the meteoric explosion. The lowest velocity at which a meteor enters the atmosphere is

$$v_{min} = \sqrt{\frac{6c\Theta_{vz}A}{\beta\left(\frac{\omega E}{\sigma_p}\Theta_{vz} + \frac{3}{2}\mu\right)}}, \qquad (5)$$

which for iron meteors is 2400 m/sec. However, the faster the meteor travels, the smaller the decrease in its velocity needed to cause explosion, and the larger the meteor the deeper it must penetrate the atmosphere in order to explode. In the case of iron meteors the explosion debris is scattered outward at the velocity of 10 m/sec, produces luminescence and, having traveled a certain distance, re-explodes. The secondary debris repeats this process over shorter distances, and the destruction proceeds until total dispersion of the meteoric mass occurs or until the velocity drops below v_{min}. The remaining fragments fall to the earth in the form of a meteorite shower. Orig. art. has: 15 formulas.

ASSOCIATION: none

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POKROVSKIY, G.I., prof., doktor tekhn. nauk

Dependence of the shape of the area of the blast effect on the shape and distribution of the charge. Vzryv. delo no.54/11:235-240 '64. (MIRA 17:9)

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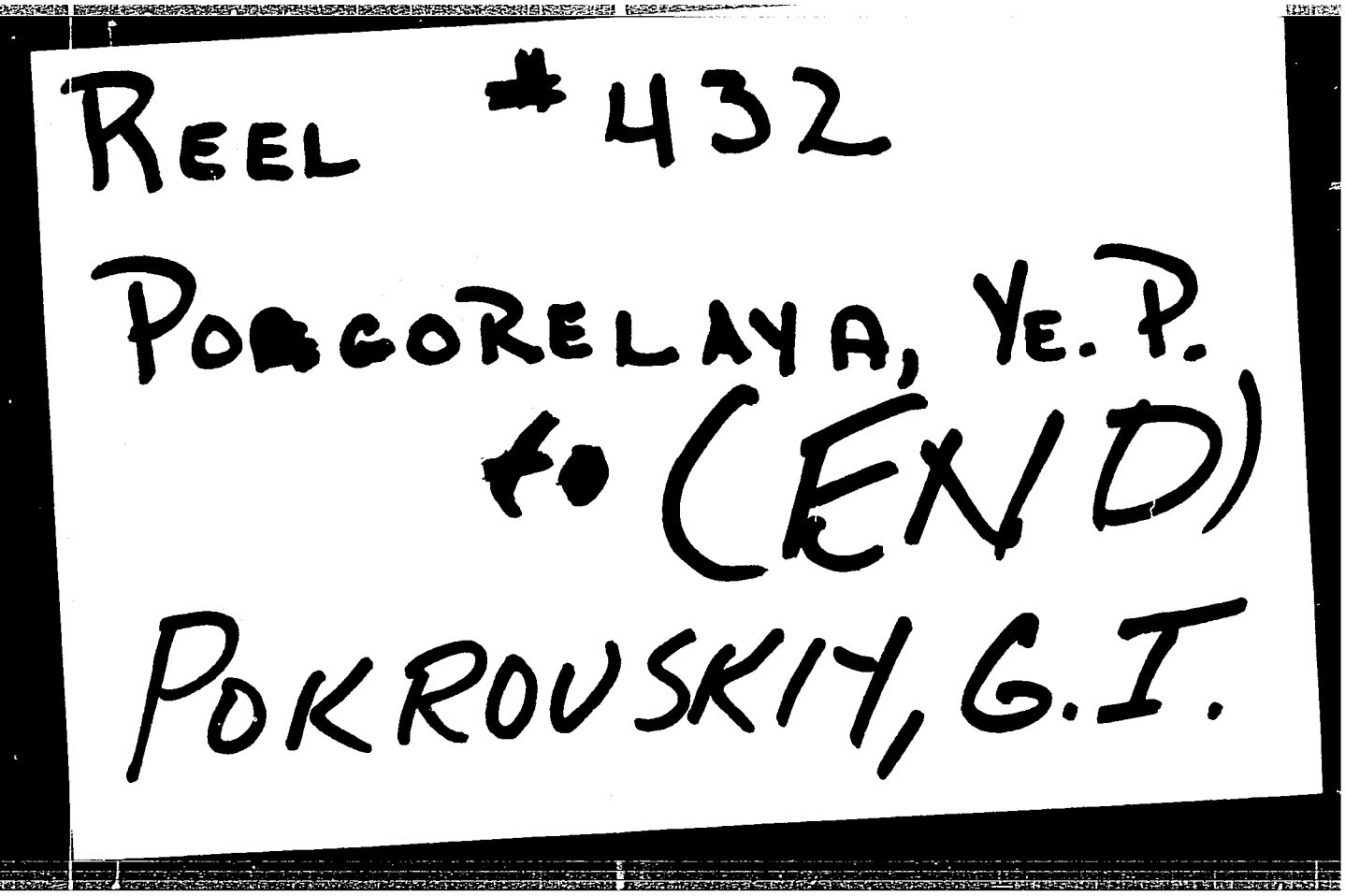

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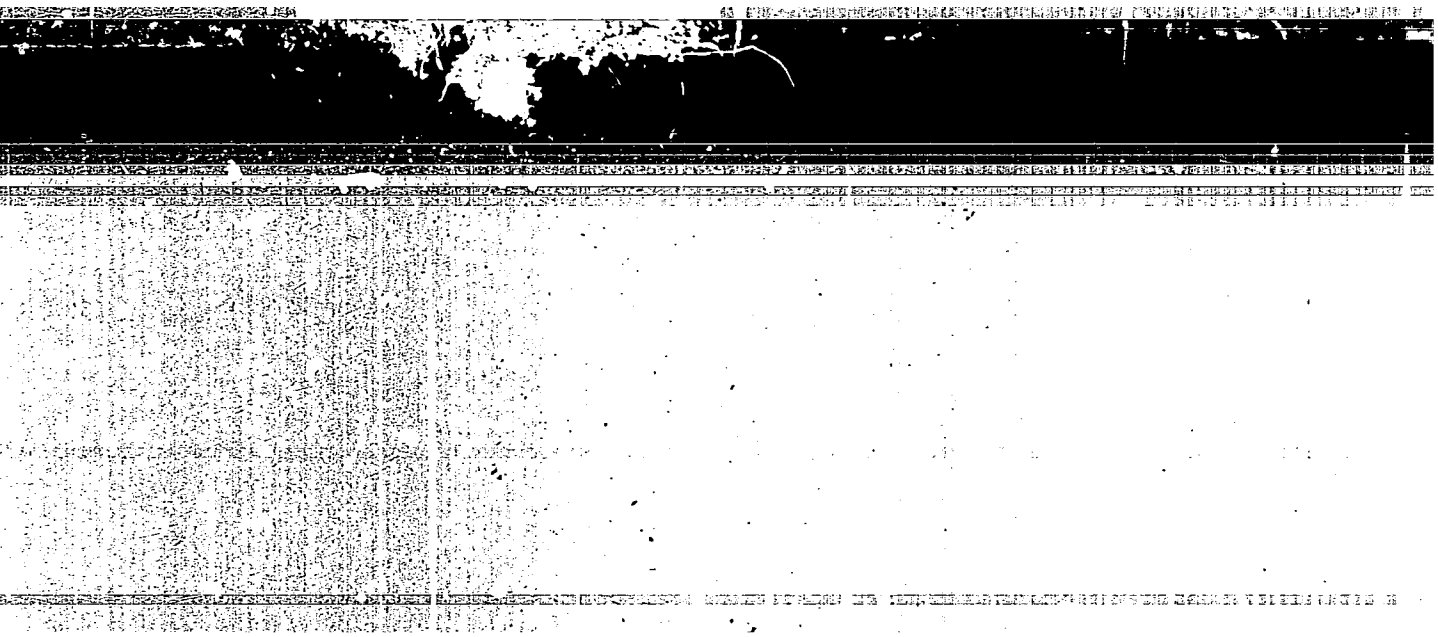

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